

A REPORT

UPON THE

Public Health of the Borough and Port of Great Yarmouth,

FOR THE YEAR 1890,

COMPRISING SOME PARTICULARS OF

POPULATION, VITAL STATISTICS, CAUSES OF
DEATH AND LOCALITIES OF ZYMATICS;

TOGETHER WITH

*The Numbers and Characters of the various Nuisances abated,
and a short account of the more*

IMPORTANT SANITARY MATTERS,

DEALT WITH BY THE U. & P.S.A. BY

JOHN BATELY, M.D., L.R.C.P., LOND., &c.

*Medical Officer of Health and Medical Superintendent of the Urban
Sanitary Authority's Infectious Diseases Hospital.*

—:O:—

PRINTED BY ORDER OF THE SANITARY COMMITTEE OF THE CORPORATION.

—:O:—

Great Yarmouth:

J. BUCKLE, STEAM PRINTER, KING STREET.

1891.

England & Wales during 1890.

Population estimated to the middle of the year,		29,407,649
Registered Births	..	872,515
Registered Deaths	..	564,248
Annual rate of Births per 1,000 of the population		29.7
,, Deaths ,, ,,		19.2
Excess of Births over Deaths	..	308,267
Estimated increase of population	..	394,685
Emigrants—English and Welsh	..	142,530

The birth-rate in England and Wales during last year was 29.7 per 1000 living, being so much at 2.9 per 1000 below the average rate in the preceding ten years. The birth-rate has now experienced a continuous decline since 1876, when it was 36.3, compared with which the rate last year showed a decline of no less than 18.2 per cent.

The death-rate per 1000, which in the two years 1888 and 1889 had been unprecedently low, viz., 17.8 and 17.9 respectively, and had averaged in the five years 1885-89 only 18.6, rose last year to 19.2, this rate, however, being lower than that in any year prior to 1881.

Registrar General's Report.

January 31st, 1891.



REPORT.

TO THE GREAT YARMOUTH URBAN SANITARY AUTHORITY.

GENTLEMEN,

I respectfully invite your consideration of the following report upon the Public Health of this Borough during the year 1890.

With the commencement of the Municipal year in November last, you acquired sanitary control of the small hamlet of Vauxhall, an overflow of this town to the west bank of the Bure, and which has in recent years, in consequence of its utter chaos, been of considerable annoyance to itself, and to that portion of this Borough which it adjoins. Further on I shall have something to say of the public works that are absolutely necessary to do there, to make habitation tolerable, but I make mention of the district in this place in order to say the vital statistics I give below have reference to the Borough without Vauxhall.

A national census will be taken on the fifth day of April next, when the true number of individuals forming

the public you are concerned for will be ascertained. For my present calculations, however, I assume the increase of population has been maintained during the decade ending next April, as was found to obtain during the previous one; and if so, at the middle of 1890 there were living in this Borough 50,272 persons, and at the end of the year probably 50,491.

The vital statistics I now lay before you refer to the fifty-three weeks ending with the third of January, 1891, and during that time there were registered, as occurring within the limits of your district,

1,490 BIRTHS and 986 DEATHS.

By applying these figures to the estimated population, as given above for the middle of last year, there evolves a

BIRTH RATE of 29.63, and a
DEATH RATE of 19.61 per 1,000.

Of all the births 5.5 per cent. were illegitimate, and, unfortunately, babes of this class are those which swell our infant mortality. More than 18 per cent. of the baby population of last year died before it was a twelvemonth old; children born in wedlock going at the rate of 17 per cent., whilst those of questionable parentage going at the surprising rate of 36 per cent., or rather more than twice as fast as those more happily circumstanced. Public attention is now being fairly well directed to this important matter, and protective legislation for infants and young children is resulting. But it seems absolutely necessary for the well-being of illegitimate that the home of each one should be registered with the Sanitary Authority, whether it is nurtured by its mother or any other person,

and that the child, its surroundings, and the care taken of it, should be frequently seen by some public official.

The death rates in the three sub-registration districts within the Borough were as follows :—

21.35 per 1,000 in the Northern District,
 19.30 ,, Southern ,, and
 16.74 ,, Gorleston and Southtown.

In each district the death rate is higher than it was in 1889. At the Workhouse in the Northern, there were 75 deaths of natives and 4 of strangers. At the Royal Naval Asylum in the Southern there were 11 deaths of men of the Royal Navy and natives of other towns ; also in the same district, at the Public Hospital there were 16 deaths of townspeople and 2 of strangers. How many visitors or strangers died in private lodgings throughout the Borough I am unable to tell, as the Registrar for the South district only notes the domiciles of persons dying in public institutions, whilst the Registrars of the other districts have kindly noted for me 13 instances of visitors dying in private lodgings.

The table of deaths on pages 6 and 7 is in accordance with the Local Government Board's direction, and exhibits many particulars as to ages and causes of death within your Sanitary districts during 1890. I have supplemented it by giving the totals of like particulars for several years past, so that comparison of the various years may be made.

The Registrar General groups together small-pox, measles, scarlet fever, diphtheria, whooping cough, fever,

TABLE OF

During the year 1890, in the Urban Sanitary District of Great Yarmouth,

Names of Localities adopted for the purposes of these Statistics.		Mortality from all causes, at subjoined ages.						
		(a)	(b)	(c)	(d)	(e)	(f)	(g)
NORTHERN DISTRICT	.. .. ..	459	128	29	17	17	102	166
SOUTHERN DISTRICT	.. .. ..	340	93	36	22	19	78	92
GORLESTON & SOUTHTOWN	.. ..	187	50	25	11	6	42	53
TOTALS ..		986	271	90	50	42	222	311
<hr/>								
During the Year 1889	..	875	249	79	37	48	197	265
Ditto 1888	..	1002	290	82	28	43	258	301
Ditto 1887	..	986	265	129	31	57	214	290
Ditto 1886	..	1087	348	123	25	42	221	328
Ditto 1885	..	915	222	102	39	46	233	273
Ditto 1884	..	1017	301	133	43	43	233	264
Ditto 1883	..	904	232	86	35	41	206	304
Ditto 1882	..	953	267	143	37	40	199	267
Ditto 1881	..	889	245	108	30	37	219	250

DEATHS.

classified according to DISEASES, AGES, and LOCALITIES.

Mortality from subjoined causes, distinguishing Deaths of Children under Five Years of age.

(i)	Fever.																		Bronchitis, Pneumonia & Pleurisy.		Heart Disease.		Injuries.		All other Diseases		Total.	
	1. Smallpox.	2. Scarletina.	3. Diphtheria.	4. Membranous Group.	5. Typhus	6. Enteric or Typhoid.	7. Continued.	8. Relapsing.	9. Puerperal.	10. Cholera.	11. Erysipelas.	12. Measles.	13. Whooping Cough	14. Diarrhoea and Dysentery.	15. Rheumatic Fever	16. Ague.	17. Phthisis.											
Under 5 5 upwds	—	—	—	—	—	0	0	—	0	—	0	2	5	22	—	—	—	3	24	0	2	99	157					
	—	—	—	—	—	16	2	—	1	—	1	0	1	5	—	—	—	31	40	22	10	173	302					
Under 5 5 upwds	—	1	—	2	—	1	1	—	0	—	0	0	0	12	18	0	—	6	22	0	2	64	129					
	—	0	—	1	—	9	0	—	1	—	1	1	1	1	7	2	—	24	37	20	8	100	211					
Under 5 5 upwds	—	—	—	3	—	0	—	—	0	—	0	—	4	6	—	—	0	14	0	2	46	75						
	—	—	—	0	—	7	—	—	2	—	1	—	0	0	0	—	8	19	9	8	58	112						
Under 5 5 upwds	—	1	3	2	—	1	1	—	0	—	0	2	21	46	0	—	9	60	0	6	209	361						
	—	0	0	1	—	32	2	—	4	—	3	0	2	2	12	2	—	63	96	51	26	331	625					

Under 5 5 upwds	—	—	1	3	—	4	—	—	0	—	0	18	1	53	0	—	10	56	0	8	174	328		
	—	1	2	—	21	—	—	—	2	—	3	2	0	5	2	—	59	55	54	31	310	574		
Under 5 5 upwds	1	—	1	7	—	0	0	—	0	—	2	1	11	65	0	—	9	55	1	5	214	372		
	0	—	1	0	—	19	3	—	3	—	1	0	0	6	2	—	60	108	62	35	330	630		
Under 5 5 upwds	—	4	2	8	0	4	—	—	0	—	1	25	14	42	0	—	1	92	1	6	194	394		
	—	3	0	3	1	18	—	—	5	1	3	0	2	1	1	—	64	87	66	42	295	592		
Under 5 5 upwds	—	14	2	5	—	0	0	—	0	—	1	11	28	89	2	—	2	54	1	12	250	471		
	—	4	1	0	—	14	1	—	2	—	4	1	0	6	3	—	54	102	49	23	352	610		
Under 5 5 upwds	—	8	7	6	—	2	0	—	0	—	2	6	5	32	0	—	2	50	2	6	196	324		
	—	1	1	6	—	42	2	—	1	—	6	0	0	4	2	—	72	83	56	22	293	591		
Under 5 5 upwds	0	0	10	17	—	0	0	—	0	4	3	31	19	62	0	—	3	66	0	1	218	434		
	1	1	4	6	—	18	1	—	2	2	4	3	0	2	5	—	68	70	69	24	303	583		
Under 5 5 upwds	—	1	3	21	—	1	1	—	—	1	—	9	35	—	—	2	45	0	3	196	318			
	—	2	2	7	—	6	0	—	—	2	—	0	6	—	—	67	74	51	31	338	586			
Under 5 5 upwds	—	6	0	4	—	1	—	—	0	—	0	17	16	78	1	—	5	83	0	1	198	410		
	—	1	1	2	—	8	—	—	4	—	11	1	0	5	2	—	57	56	59	28	308	543		
Under 5 5 upwds	1	15	2	3	—	2	1	—	0	—	0	16	4	46	0	—	0	65	0	3	195	353		
	5	6	2	2	—	7	1	—	9	—	9	1	1	4	1	—	59	69	46	32	282	536		

diarrhœa and cholera, as the principal zymotic diseases, and bases his calculations of the zymotic death rate upon deaths from these maladies only, and I have always followed his example. Of those diseases there were within this Borough during last year 123 deaths, and they produced a death rate of 2.44 per 1,000 persons living. These figures, with the chief of those given on previous pages, I here tabulate so as to bring them into contrast with the averages of the ten years last past.

Periods.	Births.	Rate.	Deaths.	Rate.	Zymotic Deaths.	Rate.
During 1890	1490	29.63	986	19.61	123	2.44
Average of ten years, 1880-89 }	1603	33.14	958	19.87	125	2.60

It would be exceedingly interesting to know how the above figures compare with the like particulars of other towns of similar size to Yarmouth, but as the Registrar General has lost faith in "estimates of population in small communities," so far away from the last census, and discarded them, I very much regret I am unable to compile such a table. Possibly, however, the following figures I have worked out from the Registrar General's quarterly returns, and the returns made to me by the Registrars of the sub-districts within this Borough, may afford you some information as to how our death rates compare with the national rates and those of several large groups of districts. Nevertheless, I should have been glad to have laid before you the individual vital statistics of towns believed to be about equally populous to Yarmouth.

Annual death rates per 1,000 from all causes and from several zymotic diseases during, 1890 :—

	All Causes.	Prncpl. Zymotic Disease.	Small-pox.	Measles	Scarlet Fever.	Diphtheria.	Whooping Cough.	Fever.	Diarrhoea.
England and Wales	19.2	2.02	0.00	0.42	0.23	0.18	0.44	0.18	0.55
28 Great Towns	21.2	2.72	0.00	0.62	0.30	0.23	0.59	0.18	0.78
50 other Town distcs. (including Yarmouth)	19.5	2.06	0.00	0.34	0.30	0.11	0.44	0.22	0.63
England & Wales, } less the 78 Towns }	17.7	1.58	0.00	0.30	0.17	0.15	0.36	0.17	0.41
Yarmouth (alone)	19.61	2.44	0.00	0.03	0.01	0.05	0.45	0.79	1.15

The first line of figures relates to England and Wales as a whole, *i.e.*, all urban and rural districts massed together; the second line relates to London and the great centres of trade and commerce, wherein the conditions of health in the aggregate, are generally considered most unfavourable; the third line relates to the large urban districts, while the fourth line relates to all the small towns and the rural districts in which the conditions of life are most favourable. The fifth line, relating to Yarmouth alone, is, as I have explained above, from my own data, and it is important to note our gross local death rates are somewhat in excess of the national ones. Of those relating to individual zymotics, however, our fever and diarrhoea rates are, unfortunately, far in advance of any above them.

In considering the incidence of zymotic disease, we have this year most valuable information brought us by the

Infectious Diseases Notification Act as to the nature, number, and localities of cases of such illnesses, which I arrange hereunder in tabular form. The Local Government Board also asks for the number of cases of each disease in patients under and over five years of age, but inasmuch as the official certificate does not specify the age of the person it refers to, my information in this respect is very incomplete.

In former years the information as to population and births in the three sub-registration districts, has been incorporated with the table relating to deaths on page 6. Now the Local Government Board wishes it to precede, in the following table, the figures relating to infectious disease in those localities. The figures in the first column under each district indicate the number of cases of illness reported to me. The figures in darker type in the adjoining column are the numbers of such cases as were removed to your Infectious Diseases Hospital for treatment.

		North District.	South District.	Gorleston & Southrn.	Totals.
Population of all Ages	Census, 1881 ..	20,612	16,601	9,001	46,214
	Estimated for '90	21,493	17,611	11,168	50,272
Registered Births	..	611	454	425	1490
Small-pox	..	..	..	..	..
Searlatina	..	11	3	6	17
Diphtheria	..	8	..	2	17
Membraneous Croup	..	..	..	..	..
FEVERS—					
Typhus	..	..	..	..	..
Euterie or Typhoid	..	138	11	80	291
Continued	..	1	..	6	19
Relapsing	..	..	..	1	..
Puerperal	..	2	..	1	8
Cholera	..	..	..	..	..
Erysipelas	..	20	2	8	4
				10	..
					38
					2

Compulsory notification of Infectious Diseases commenced in this Borough on the 1st January, 1890, and is confined to the diseases mentioned in the act. The above figures show how very sparingly the Infectious Diseases Hospital is used. Those cases actually removed there were nearly all paupers or those of the poorer classes. Of the Scarlet Fevers, two were children of visitors, the lodging-house people were glad to get rid of, and two were from a charitable institution. Of the 19 Typhoids, 11 were paupers, 3 from charitable institutions, 3 of poor persons not actually paupers, but too poor to pay the usual hospital charges, 1 foreigner from ship-board, and one a maid-servant from her employers. Both the Erysipelas cases were paupers. Thus it is quite clear, for the Hospital to be of any avail for the arrest of infectious diseases in this town, it must be used far more frequently than at present, in fact it must become something far beyond a pauper hospital. Isolation is the necessary complement of notification, and this must be done for the majority of folks at least, in a properly equipped institution. It is very delusive to attempt it at home, especially in the crowded districts of this town, as was unfortunately proved last year in many instances by successive cases of fever occurring in the same house. Hence it becomes a question as to how far any person has a right to harbour dangerous disease in his dwelling to the prejudice of his family or his neighbours. At present our powers of compulsory removal are very limited indeed, and could, with great benefit, be extended to reach all cases the Medical Officer of Health considers cannot be sufficiently isolated or properly treated at home.

The following table shows per month the total number of the different infectious cases notified, and the number of deaths resulting :—

MONTH.	Typhoid.		Diph- theria.		Erysipe- las.		Puer- peral.		Scarla- tina.		Con- tinued F.	
	Sickness	Death	Sickness	Death	Sickness	Death	Sickness	Death	Sickness	Death	Sickness	Death
JANUARY ..	24	3	2	..	1	..	2	3	1	..	..	..
FEBRUARY ..	17	1	2	..	3	..	..	..	1	..	1	..
MARCH ..	41	4	2	..	3	1	..	..	1	..	..	..
APRIL ..	33	2	..	..	1	..	..	..	..	..	..	..
MAY ..	19	6	..	..	2	..	1	1	1	..	..	..
JUNE ..	17	3	..	1	6	..	..	..	1	..	..	..
JULY ..	19	2	2	..	4	..	..	..	..	..	..	..
AUGUST ..	10	1	..	..	3	..	..	..	3	1	1	1
SEPTEMBER ..	29	2	5	1	3	1	..	..	4	..	1	..
OCTOBER ..	27	2	..	1	4	..	..	..	..	..	2	2
NOVEMBER ..	34	3	3	..	3	..	..	..	2	..	2	..
DECEMBER ..	21	4	1	..	5	1	1	..	3	..	1	..
Totals ..	291	33	17	3	38	3	4	4	17	1	8	3

Our record of infectious disease for last year, as set forth in the preceding pages, is terribly large, and betrays some serious defects in the sanitary condition of this Borough. From the personal enquiries I have made, I have very little doubt the record, as a whole, may be accepted as substantially correct, but there are many who openly avow their conviction that were there no fees paid for the notification certificates we should not have so many. Certainly when children are said to be suffering with very serious maladies and found playing about the house as usual, it does look to the unprofessional observer as if veracity is very much stretched. Unquestionably some infectious attacks may be of so mild a character as to be of very slight inconvenience to the patient, still it is of importance we should know of them all, and it only

behoves us to request medical men to be quite sure of their diagnosis before certifying.

The usual inspection of houses visited by infectious disease reveals the fact that much cruel default is made by the occupiers of the houses themselves, in creating and harboring, rather than in subduing and removing, conditions well known and widely recognised, as inimical to good health. It is impossible to insist too strongly upon the importance of domestic cleanliness. However perfect the sanitary arrangements of a dwelling may be, they are of little account in the presence of adventitious filth, and this, coupled as it frequently is, with intemperate habits, nurtures fever and disease in places and circumstances the most energetic sanitary administration could hardly be responsible for. Although our survey of fever haunts has discovered many instances of filthy houses, with dirty, slovenly, intemperate inmates, the majority of the infected houses were clean and tidily kept. But the cleanest house may be, in some of its sanitary arrangements and fittings very defective, and this is just what we have found. Unquestionably the Notification Act is affording us the best possible insight into the health conditions under which people live, and it is indeed surprising the amount of bad workmanship, plumbing especially, that is to be found in modern residences, work so faulty that ere long one hopes it will be punishable to execute such.

TYPHOID FEVER, which last year caused 291 illnesses and 33 deaths, is by far the most serious of the zymotics now affecting this Borough, and as it is undoubtedly bred of filth, we may regard it somewhat in the light of a sanitary barometer, fluctuating considerably with each year.

Hereunder I give the total number of typhoid deaths per annum since 1875, and you will perceive there has also been considerable variation in each of the three periods I divide the sixteen years into.

During	1875	20 Deaths	During	1884	18 Deaths
”	1876	14 ”	”	1885	44 ”
”	1877	11 ”	”	1886	14 ”
”	1878	11 ”	”	1887	22 ”
”	1879	6 ”	”	1888	19 ”
”	1880	7 ”	”	1889	25 ”
”	1881	9 ”	”	1890	33 ”
”	1882	9 ”			—
”	1883	7 ”			269

In the first four years of the above, the mortality averaged 14 deaths per year ; in the next six it was 7·6 per year ; whilst in the last seven it has equalled 25 per year.

That some general influence is at work in this town to account for this sad mortality, you have always recognised and ever endeavoured to combat. In the early years referred to, you entered on a crusade against the polluted drinking water wells. You also went to considerable expense to improve the scavenging, by making new arrangements for the removal of night soil and house refuse. You also did much for ventilating the sewers, and later on for flushing them as well ; and thus it was with looking after the drinking water, scavenging and sewers, we passed into the second of the above periods, apparently with brighter prospects. Still, typhoid did not disappear, and it seemed reasonable to attribute its persistence to the sewer gas the surface ventilators unpleasantly reminded us of. Then it was that more flushing was done, only with the result of increasing the nuisance, and you therefore determined upon the complete cleaning and repair of

the town sewers, renovating such as needed it. This work was carried out in 1883 and 1884, and much to our amazement, the typhoid deaths assumed a higher figure directly after. Nevertheless, more ventilators, especially with perpendicular pipes, and more flushing, was decided upon ; and as the cost of the Company's water for this purpose had become a serious item of expenditure, you adopted the use of water from the sea. We were told that salt water would do more harm than good, but during 1886, the first year the sea water was used for flushing the sewers, the typhoid mortality again fell. This fact, and the question that was just then assuming prominence as to the purity of the Company's water supply, which, by the way, has been largely substituted for well water in this town, detracted attention from the sewers, and for the next two or three years you endeavoured to convince the Company their supply was not so pure as it should be. Quite recently the privies and other sources of soil pollution near dwellings have come under serious indictment, and interest now centres in the question whether w.c.'s should not become universal in the town. But notwithstanding all your exertions for improvement in the sanitary matters above referred to, the public health does not seem to have derived much advantage, and I am of opinion the serious defects still existing have much to do with the present unhealthiness of the Borough and the causation of typhoid.

The scavenging of the town is still very badly done ; the two main sewers are still tide-locked for fully half the twenty-four hours ; the Company's water is still drawn from the Broad which is fed by the surface washings of as many villages and fields as ever ; and the privies still

survive, although many are giving place to w.c.'s in crowded localities. And another sanitary evil, the frightful density of dwellings in many parts of the town, has not yet been seriously taken in hand. In order to discuss several of these general unsavoury influences a little in detail, I hereunder parcel out the borough, with reference to the nature of the subsoil, drainage, and density of the districts, and number of typhoid cases occurring in each.

No. 1.—Caister Road district, i.e., all north of Town Wall	7
No. 2.—Cobholm Island and all north of Bridge Road and Railway	58
No. 3.—Southtown Road and new districts on each side of it	14
No. 4.—Market Roads district, i.e., area drained by north main sewer east of Town Wall from Regent Road northward	31
No. 5.—St. George's and St. Peter's district, i.e., area drained by south main sewer east of the Town Wall from Regent Road to Queen's Road	34
No. 6.—South Denes district, i.e., the locality between the Royal Naval Asylum and Barracks and River, and drained by Asylum and Barrack sewers	9
No. 7.—In the Rows and Streets within the Town Walls north of Rows 74 and 75 ..	47
No. 8.—In the Rows and Streets within the Town Walls south of Rows 74 and 75 ..	46
No. 9.—All Gorleston and south of Common Lane and the Gas Works	41
No. 10.—In Runham Vauxhall, i.e., since November 9th Brought into the Harbour by a foreign vessel	3
	1

291

The three first localities on the list correspond in having their sewage pumped into the river, and their sewers more or less always empty. They also somewhat correspond in their populations, judging from the census of 1881, but in the nature of their subsoil and typhoid sickness, No. 1 differs materially from Nos. 2 and 3.

In No. 1 the subsoil is clean sand, dry above the ground water which is only about 4 ft. down.

In No. 2 the subsoil is formed by alluvial deposit—a muddy clay—sodden with water, and its surface much fouled with filth, as this district was, prior to being built upon, marsh and garden land.

In No. 3, the subsoil, although somewhat similar to No. 2, is dryer, having running sand underlying many parts of it, which allows of the water draining out of the soil. For very many years a large portion of this hamlet has been well built, with good class residences, although they have been much increased lately, and the land drainage, by means of ditches and steam pumping, has always been carefully attended to.

It would seem in these three districts, the sewers being like conditioned, are not so much to be blamed as the subsoil, and that which holds stagnant the most water and putrescent material is the most dangerous. If this be true, some effort should be made to drain off the subsoil water, of certainly No. 2 district, where it seems to partake of the nature of sewage in the soil with characteristic effect. These districts are not densely crowded, either with people or dwellings, and nine-tenths of the inhabitants are of the artizan or labouring classes.

No. 4 district has a clean, sandy subsoil, although there is a dirty strip in it, where an old moat, for many years used as a sewer, formerly existed.

No. 5 district is very like No. 4, being generally clean sand with a dirty strip in it, due to a similar cause.

These two districts form the new town on the sea shore, and it is of the first importance for the sake of our reputation as a sea-side resort, that healthy conditions should prevail there. The northern main sewer drains No. 4, and the southern main sewer drains No. 5, and both these sewers are much tide closed, so that the sewage collects at the outlets, and in proportion to its quantity, heads back up the sewers. Whatever space the sewage thus occupies in both sewers, corresponding volumes of sewer air are displaced and either driven out of the sewers or compressed in them. When to the normal complement of sewage is added the large volumes of water the flush tanks are constantly discharging, and frequently heavy rain showers, the pressure on the sewer air is very much intensified during the time the tide is closing the sewers' outlets. As the filling up of the sewers proceeds, the apertures for ventilation in the lower portions near the river become useless, in fact, the sewage seals them, and ventilators further up the sewer emit an undue quantity of sewer gas. We have been told it is the use of the sea water for flushing which creates the sewer gas, but of this we really have no evidence; it rather seems we suffer from quantity, not quality. Copious flushing should certainly only be done when the sewers outlets are free, and the sewage can rush into the river. But even then the sewage would collect during high tide, and to ensure a constant output of this, some pumping arrangement seems desirable. The object to be attained is the continuous outrun of sewage, whether the tide is high or low, and as gravitation alone cannot do this, it becomes a matter for your consideration how far it should be supplemented by mechanical means.

In both districts many of the typhoid cases occurred over or near the polluted strips of subsoil, but several were in houses where sewer gas had free admission. In these districts a great crowd of visitors are lodged every summer, and w.c.'s are very general, at least in the half skirting the beach, and it is some satisfaction to know that east of Nelson Road, in its whole length, there were only 15 cases of typhoid illnesses reported. This fact, I think, may go to the credit of the ventilators standing between the flooded portions of the sewers and their minute ramifications amongst the houses on the Beach.

In No. 6 district, that all south of Queen's Road, the sewers, like the two main sewers we have just been discussing, empty by gravitation only, and are also somewhat tide-locked. They are, however, short, of good fall, and well ventilated ; nevertheless, if they could be kept always running empty, they would be of much less danger to the dwellings connected with them. The subsoil is clean throughout this locality.

In Nos. 7 and 8 districts are many short sewers running straight to the river. The area within the town walls lies at a higher level than the districts around outside, and consequently the sewers are in great part above the tide, and are generally running empty. The subsoil is of very questionable character in its upper layers, but beneath it is more or less sand, and its unwholesomeness is more due to the surface pollution than to any fault of the present sewers. Clean sand, through which the movements of the tide are very perceptible, underlies the old town as it does all the more recent localities outside the walls, but while the latter have a very thin surface of made ground, the

districts we are now considering have an upper crust of several feet thick, and it is in this debris of ages, much that is nasty exists. The dwellings are terribly crowded together in many of the Rows, and privies are universal there ; of these I shall speak further on, but where the ground is covered to its utmost capacity with tenements, many of them ruinous and crowded with people of the poorest class, surface pollution must necessarily take place.

In No. 9 district the land is high above the tide and the sewers have excellent falls. To prevent any heading back when the outlets are tide locked, there are, by the mouths of the chief sewers, covered reservoirs where the sewage collects until the tide permits of its outflow. The Gorleston sewers are very clean and on the whole satisfactory. The subsoil throughout the district is dry and wholesome.

No. 10 district is low marsh land, most irregularly built upon, lying behind the west bank of the Bure, intersected by ditches more or less stagnant, and having within its area gigantic nuisances in the shape of manure factories, chemical works, slaughter houses, &c. Its subsoil is muddy alluvium very similar to that of district No. 2. There is no proper water supply ; no sewers, but very much filth drains into the ditches ; only one road worth the name ; and no uniform plan of building. Houses adjoining each other are faced in contrary directions and at very different levels. Some are upon the river bank—comparatively high ground—and drain direct to the river ; others are down so low as to be utterly unable to drain, in fact they act as cesspools for their neighbours and their occupants have to bale out the sewage flood which generally comes down upon them with

heavy rains. The inhabitants of this district number 747 persons, and since the 9th November last, when it was joined to this Borough, to the end of the year, there were five births and no deaths. What the annual Birth or Death rates may be, or the annual amount of infectious sickness, will be told with more certainty twelve months hence than now.

A very complete sanitary reform is urgently needed in Vauxhall. A good road should be cut straight through the locality, and an efficient system of drainage, both for the soil as well as the houses, laid down. Such a system must not be dependent upon gravitation alone, or I am afraid the people's health will not be much benefitted thereby. Those ditches necessary for dividing the land and draining the marshes should be cleaned out, but all those now acting as open sewers should be cleared of the terrible filth they contain and filled up. The manufacture of manure from rotten fish and the offal of fish curing houses should be regulated, for it is quite possible to carry on this work without creating the awful nuisance at present existing. The tar and chemical works should be similarly dealt with. The Yarmouth Water Company should be requested to extend their pipes to Vauxhall, and every house required to take of them. You have already arranged for the scavenging of the district, and it would further add to the public convenience were a few lamps placed in the dark and dangerous bye ways, especially on the river bank where the chief thoroughfare is entirely unprotected.

Although I have thus far considered the condition of the subsoil and sewers in relation to the incidence of typhoid, I do not attribute to the general influence they exert, the sole causation of the disease.

Other influences, and also of a general character, arise from the defective scavenging and questionable water supply. As to the former, the material when collected and mixed up is of such poor manural value that the contractors have great difficulty in getting rid of it. In the near future you must consider some scheme not only for the better collection, but also for the disposal of the refuse, and we are told a destructor is the thing to free us of it. Others urge conveying it all to sea and throwing it overboard. Possibly the difficulty might be solved by sending only the night soil into the country, burning the cinders and light refuse, and taking to sea the crockeryware, glass, tins, shells and other refuse that would sink, for obviously floating refuse might drift ashore. As to the water supply, the Council's recent determination to obtain parliamentary power to purchase the Company's concern, argues well for improvement for this most essential commodity. A great deal more might be profitably said upon these general topics, but my report grows apace, and I will therefore now place before you some particulars of the houses visited with typhoid. Overleaf, I tabulate the monthly totals of typhoid illnesses with the chief sanitary conditions of the infected dwellings.

The difference between the figures of the first and second columns indicates the instances in which more than one case occurred in the same house during the particular month the figures refer to. There were, however, some instances of cases cropping up afresh in such houses several weeks and even months after the first notification, but in the following table these are reckoned as cases of re-infection, and therefore each monthly record show the figures properly pertaining to it.

Month.	Total cases.	Houses infected.	Their conveniences.			Their Water supply.	
			Privies.	Pipe Closets.	w.c.'s.	Pumps.	Company's Water.
JANUARY ..	24	22	17	1	4	1	21
FEBRUARY ..	17	17	13	2	2	4	13
MARCH ..	41	36	26	3	7	10	26
APRIL ..	33	33	20	3	10	4	29
MAY ..	19	19	11	3	5	6	13
JUNE ..	17	14	7	2	5	1	13
JULY ..	19	17	9	1	7	1	16
AUGUST ..	10	10	4	..	6	2	8
SEPTEMBER ..	29	26	18	1	7	5	21
OCTOBER ..	27	23	17	..	6	2	21
NOVEMBER ..	34	32	18	7	7	6	26
DECEMBER ..	21	21	15	3	3	5	16
Totals ..	291	270	175	26	69	47	223

The large proportion of cases occurring in houses served with privies and Company's water, will strike the most casual observer, but how much either has to do, specifically, with the typhoid sickness, is difficult to tell. The majority of the privies are very dirty places, with horrible pits, exhaling the most intolerable effluvia, and leaking any amount of liquid filth into the subsoil. Unfortunately, they are to be found throughout the Borough, but more especially in the poorer and denser districts where space is least tolerant of them. They are universal in the Rows. In my visitation of the typhoid-stricken houses, I notice very many of the cottages are provided with a rain-water cistern, sunk in the soil of the back yard, and I am frequently told these cisterns very rarely are brimming full, and still more rarely run over. I have satisfied myself again and again these cisterns have no overflow pipe—frequently there is no underground drain near—but

that the upper two or three courses of bricks forming the cistern are not cemented, and their joints left unstopped, so that the water really overflows between them into the soil, and so soaks away. Very generally also a privy pit is in close proximity, and a surface-gutter, or, if a covered drain, then a slop gulley. Sometimes the paving of the yard is broken, and swidges of liquid filth standing here and there on its surface; but it is no uncommon thing to find the yard nicely concreted and very clean. Almost invariably when I find typhoid associated with such conditions as allow of some soakage and pollution of the soil, I also find the underfloor spaces of the living rooms not ventilated—no air bricks in the walls. When the house is closed and warm during the dark hours, and a considerable indraught thereby created, all the air that cannot get in through doors or windows, is sucked up from the soil beneath the floors, and from a much larger area than the underfloor space if the yard is sealed with concrete. So that if we have not in that house the open end of a sewer, we have the house inhaling the vapour of liquid pollution, and although possibly not so repulsive to the nose as sewer gas, yet it seems to contain the material for generating typhoid just as surely. What the typhoid poison may be, I am not aware has yet been discovered, but it seems tolerably clear that it is born of putridity and moisture nurtured by warmth, and when free of its factory, floats on vapour. Its affinity for water has long been recognised. All that can be done for drying the soil and protecting it from contamination is done in individual instances after the fact, but I strongly advise you to do it generally throughout the town in anticipation of disease. Privies certainly ought to be abolished in the denser portions of the town, and w.c.'s

substituted. The terrible stench the privy pits emit in closely-built districts as the Rows, augment most dangerously the already vitiated atmosphere such crowded localities give rise to, and deteriorate the public health, but when the privies contain typhoid excreta, who can indicate the limit of the area, above or below ground, their specially polluting influence extend to ? A necessary associate with the w.c. is a dust and refuse bin, otherwise the w.c. may soon get blocked with material it never was intended to receive. As to the flushing and fittings of such w.c.'s, I think it is quite possible to use your sea-water service and to construct plug fittings, worked by a hinged seat, so that every time the closet is used, an efficient flush takes place without any attention on the part of the user. The sea-water would have the advantage of rarely freezing ; of there being no stint in the dryest summer ; of costing nothing for conveyance from a distance, for filtration, for storage, &c. ; and of not trenching upon the drinking-water supply. The great obstacle is the absence of covered drains in many of the Rows, and an impression the sewers in the streets traversing the Row districts, not being capable of taking so much extra sewage as a w.c. service in the Rows would throw down them. This, I think, is an entire mistake. I believe the sewers referred to would discharge all such extra work exceedingly well, as they are short in length, of good fall, and lie at a higher level than the main sewers into which so many w.c.'s discharge.

Besides the foregoing considerations for improving the general and particular sanitary conditions existing in this Borough conducive of typhoid, I would suggest that an organised attempt be made to abate the fever by preventing

the contagium of every known case gaining access to any w.c., privy, gutter or drain. Now these receptacles receive the whole of the typhoid dejecta produced in this town, and as the material is capable of communicating the disease, I would suggest that a service of dry disinfected dust in pails be arranged for patients certified suffering from typhoid. As soon as a case of typhoid is reported, I would have a covered pail a third full of desiccated and carbolized dust be sent for the patient's use, and replaced with a fresh pail and dust every morning, or oftener while the illness lasts; the one removed being taken away in a covered van to a furnace in an open space and there its contents burnt. To my mind it is essential the dust be very finely levigated, so as to envelope and absorb the excreta as passed directly into it. The pail should be carefully covered when not being used, and kept in a dry place, easy of access for the patient, who, if too ill to leave his bedroom, should have the pail brought to him. For children the pails might be fitted with broader rims, and I think would, with this class of patients, be found of very great service. Unfortunately, with some persons, a child's evacuations is tolerated in a bedroom much longer, especially during night, than is either wise or healthy, and it seems by this means much contamination of inmates may arise. In the majority of instances of typhoid spreading in households, a child has been the first attacked.

DIPHTHERIA, which caused seventeen illnesses and three deaths, is a disease very different to typhoid in its manifestations, but which nevertheless seems sometimes to have very similar origin. When it occurs in the presence of unwholesome conditions this relationship is the more

apparent, and the majority of the above cases were found in such association. But where it occurs in places so salubrious in every particular as to exclude all reasonable possibility of its being due to insanitary causes, it may not unfrequently be traced to infection brought from a distance in milk. There are other means of introducing it unsuspectingly into very wholesome households, but the risk families run in taking milk of careless dairymen is beyond conception. One of the above illnesses occurred in the house of a cowkeeper and milk seller, where the patient was nursed in the front sitting room, and in the hall or passage through which the attendants upon the sick child had to pass the churns of milk were placed, previous to being taken out, "on the round." Clearly it should be imperative that all cases of infectious disease occurring in milk sellers houses should be transferred to the Infectious Diseases Hospital, for it is impossible such isolation can be had at home as will effectually preserve the milk from all risk.

ERYSIPelas caused thirty-eight illnesses and three deaths last year, and is noticed in this place because it is a disease reported under the Notification Act and one that may be generated by insanitary surroundings, especially when coupled with intemperate habits and poor living. Occasionally it prevails epidemically, and then undoubtedly it spreads by infection and becomes the terror of lying-in women, for in them it develops PUERPERAL FEVER, and in this connexion it assumes its greatest importance. Of this latter disease unfortunately, there are four cases of illness notified and four deaths registered. These are among the most melancholy cases with which we have to

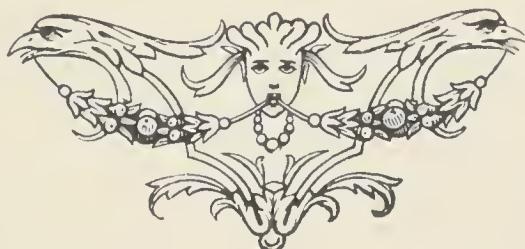
do, for a young family bereft of its mother is indeed a pitiable case, especially if it happens to be that of a working man. Unquestionably we do good work, in suppressing every unwholesome influence we can find environing Erysipelas or Puerperal Fever.

SCARLATINA caused seventeen illnesses and one death. This disease, very prevalent in Yarmouth a few years ago, now seems to have reached its minimum and will probably rise again, for it is essentially a disease of childhood. When an epidemic has swept through a community, may be killing many, and has rendered the survivors proof against its further ravages, it more or less disappears to light up afresh when a new generation of children has come along ready for its reception. Not that all children are equally susceptible to it, and it also seems that as adolescence advances the system is better able to resist the infection, so that by adult age an immunity is arrived at, equalling that conferred by an attack in childhood. The congregating of children is the most potent means of spreading this disease, but upon what conditions it depends for origin seem obscure. Those of an unwholesome character evidently encourage it. Some of the cases here last summer were in the persons of visitors who undoubtedly brought the infection with them. It would much enhance the reputation of this town as a holiday resort had we some better accommodation for the isolation of adventitious cases than our Infectious Diseases Hospital affords. Strangers accustomed to comfort and convenience at home, seriously object to enter the Hospital and associate with the lower order of persons usually forming its inmates. We seem to need an isolation cottage within the area of the Infectious

Diseases Hospital garden, where the patient could be nursed by relatives, unobserved by the ordinary inmates of the institution. Such a cottage might also serve the purposes of a temporary shelter for families while their houses are disinfected, as contemplated by section 15 of the Infectious Disease (Prevention) Act, 1890.

CONTINUED FEVER, which caused 8 illnesses and 3 deaths, is regarded by many as non-infectious, and a disorder due to causes arising within the patient's system. The public speak of this disease as low fever, bilious fever, &c., &c. Others consider it as a mild form of enteric, and report it as typhoid. How far either opinion is right seems impossible to tell, but in order that no indication of unwholesome influence should escape us, it is reported under the Notification Act, and I refer to it accordingly.

Much other zymotic disease existed in the town last year, notably DIARRHŒA and WHOOPING COUGH. The former I referred to at length in my last annual report, and the latter is, like measles, spread by atmospheric infection, and so entirely a disease of infancy and early childhood that isolation is difficult and disinfection of little avail.





SANITARY WORK.

NUISANCE REMOVAL.

Total number of nuisances attended to by Inspector	1163
Remedied by Inspector's notice only	707
Referred to the Town Clerk for formal orders	456
VIZ:	
(a) To construct w.c.'s	94
(b) To re-construct or repair privies	93
(c) To cleanse, repair or relay drains; to cleanse, repair, or fix new gullies; and, to disconnect sink and rain water pipes from sewers	77
(d) To concrete or otherwise relay yards, passages, &c.	67
(e) To whitewash and cleanse dwellings, &c.	42
(f) To close impure drinking water wells, and to procure wholesome supply	27
(g) To repair, and otherwise render dilapidated dwellings fit for habitation	21
(h) To put up troughing and spouting	12
(i) To fill up or cleanse ditches	5
(j) To repair cellar flaps	4

(k) To cleanse cisterns and w.c.'s	...	4
(l) To repair pumps	...	3
(m) To remove fowls or pigs	...	3
(n) To remove manure and refuse	...	2
(o) To consume smoke, &c.	...	2

The work indicated above is that of Inspector O'Connor done in his ordinary daily routine. That of the Assistant Inspectors or House to House Visitors, form the subject of the next paragraph.



The House to House Inspection, to which I referred last year as then commencing, has been going on ever since, and although a most strenuous opposition has been offered to its continuance by those interested in cottage property, I am glad to say the work still goes on successfully. The Inspectors are now busy about the houses of the new town, situate between the Town Wall and the Drive—the locality where visitors are mostly lodged—and it is indeed surprising the great number of sanitary defects their investigations are bringing to light. They not only discover insanitary conditions, and advise upon the alterations necessary, but they personally serve the notices and visit the work frequently while in progress, but always after completion, and, if satisfactorily done, report to you accordingly.

During the nine months of last year the two Inspectors were at work, for they began late in March, they inspected 3,990 houses, of which 2,205 are deemed satisfactory, and 1,785 defective in sanitary condition, very many in a variety of ways. In 321 instances the drainage

was faulty. In 113 cases they found pan closets under bedrooms without flushing arrangements ; 185 privies directly under bedrooms ; and 682 privies, although not exactly under bedrooms, in such warm connexion with the dwelling as to be very prejudiced to health. They also reported 247 instances of broken pavement of yards and floors ; 23 houses so entirely filthy as to need cleansing orders ; and 362 other instances of sanitary defects, such as bad water supply, broken w.c. basins, corroded and leaking D traps, soil pipes, &c., soil pipes unventilated and inside houses, sink, waste and rain water pipes direct to sewer, damp walls, leaking roofs, and many other defects. Besides these matters, which are more immediately in their province to rectify, the House to House Inspectors reported to the Nuisance Inspector many cases of nuisances outside dwellings, arising from bad scavenging, &c. The work these Inspectors are doing is of first importance, and we hope to get a large portion of the new town inspected before the visiting season commences, but during the summer the Inspectors will continue their work in parts of the town remote from the Beach, as they did last summer, so as not to annoy the lodging-house keepers or their visitors.

I am also pleased to report the good work our Inspector of Fish is doing at the Wharf and elsewhere in the town. Only one well versed in the tricks of the trade could prove himself as useful. He commenced his work on the 3rd October, 1889, and to November 29th, 1890, when the

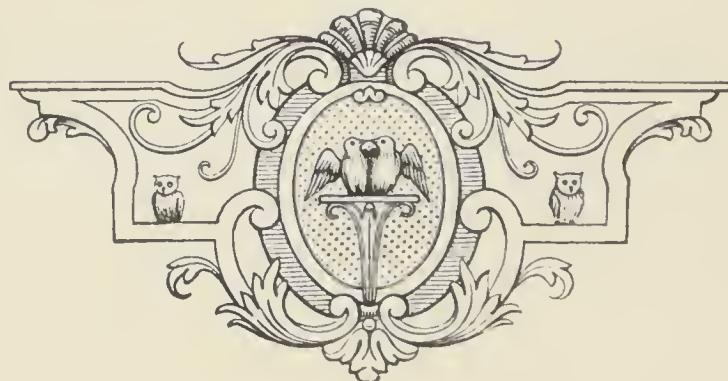
autumn herring voyage practically terminated, he had condemned

		Tons. Cwt.
22 lasts and 4000 herring estimated to weigh		49 0
460 boxes of trawl fish	,,	14 7
6 barrels of sprats	,,	0 6
24 swills of mackerel	,,	2 8
13 boxes of mackerel and herring	,,	0 4
75 head of large cods	,,	0 13
1 ped of crabs and 80 loose		
1 ped of lobsters	{,,	0 8
13 peds of whelks		
		<hr/>
	Tons	67 6

Without the vigilant eye of the Inspector we may reasonably assume that a very large portion of the above unwholesome fish would have passed into the hands of small retailers, and the poor more especially might have been the victims. How much ill health was thus prevented it is impossible to tell, but it is beyond question the credit of our fish market is considerable enhanced by the fact that we do not allow bad fish to escape us, if we know it.

The provision of Public Baths and Wash-houses, but especially Wash-houses, is a matter of considerable importance to the health and comfort of the people living in close quarters, such as the Rows; and as it is one you have already given some attention to, should, ere long, engage your serious consideration, with a view to accomplishment. Any one who is familiar with the cramped

condition of cottage property generally, but particularly of the many tenements having no rear yard space whatever, and where the drying of linen has per force to be done in passages and living rooms, will not dispute the need of public wash-houses. The boon such an establishment would be to the poor people desiring it, the comfort it would bestow, and the gratitude it would evoke, would, I am sure, afford you most satisfactory recompense.





POR T SANITARY AFFAIRS.

On the 1st January, 1891, there were upon the register at the Yarmouth Custom House, 76 merchant vessels, including colliers, coasting steamers, and tugs, and 476 fishing vessels, consisting of herring boats and smacks. There were also sailing from this port 38 vessels of the latter class and carrying Yarmouth crews, but registered elsewhere; in all our fishing fleet numbered about 514 craft. Of these, about 388 are employed all the year round, and 126 go the herring voyages only. The chief of these voyages is the autumn one—the Yarmouth herring fair—when our fleet is largely augmented by boats from the north of England and Scotland. Possibly, at that time, some 7,000 fishermen are at work from this port. The decline of the trawl fishing, mentioned in my last report, continues, and as evidence thereof, I may cite the numbers of fishing vessels on the Yarmouth register during the last three years.

On January 1st, 1889, there were	589
,, ,, 1890 ,, 569	
,, ,, 1891 ,, 476	

With your permission, I would also draw attention to the diminishing shipping belonging to this port, and to the vanishing industries going with it. It is a most serious matter that the prosperity of this town should be sapping at its very core, but the facilities offered by other ports have enticed a large portion of our over-sea commerce from us. Only 50 years ago we had on the Custom House register 328 sailing vessels all over 50 tons burden, besides three trading steamers and four tugs, all of which carried Yarmouth crews, and needed for their outfit and repair the labour of a large number of workmen. They also gave much employment in loading and discharging their cargoes. Also in the collection and distribution of many of those cargoes in Norfolk and Suffolk, much river-carriage was required.

The chief of our present foreign trade is done by alien steamers and strange sailing vessels, and the only two cases of sickness I heard of last year occurred on board such craft. The first was a case having all the early symptoms of Small-pox on board the s.s. "Ferringen," from Libau, on August 30th. We removed the man to the Infectious Diseases Hospital, and disinfected the vessel, but the case proved to be only simple fever, with stomach disturbance. The other was a case of Typhoid, brought in by the Norwegian schooner "Liberal," from Koenigsberg, on November 20th. We removed the man to the Infectious Diseases Hospital, where he went through a serious attack of the Fever, and ultimately made a good recovery. The vessel was thoroughly disinfected, and the water tanks cleansed and re-filled.

It appears only in face of Cholera or Yellow Fever can

a vessel be detained at the Detention Station, near the harbour's entrance, but that, with all other infectious diseases, there is practically no power to prevent a vessel coming up stream and endangering our people with her infection. This is a most important matter, and for the protection of the public health of this Borough, you should certainly insert a clause in the forthcoming Local Improvement Bill, that the captain of any vessel entering this harbour with infectious disease on board, should moor his vessel for inspection, observation, and cleansing at the Detention Berth, and should not move therefrom until he has obtained a written permit so to do from your Medical Officer of Health. For disregarding this enactment, a substantial penalty should be inflicted. It is also very desirable you should adopt, for the Port, the Infectious Diseases Notification Act.

Early last June, Dr. Blaxall, an Inspector from the Local Government Board, informally visited Yarmouth, and with the Inspector of Nuisances and myself, boarded several vessels in the harbour, examining their condition as to cleanliness of cabins, ventilation, water and food storage, and w.c. arrangements. He suggested a similar systematic visitation of all craft in the Port, recording the particulars of each inspection in a book specially prepared for that purpose. I furnished the Inspector with a visitation book, but I have had no report as to his proceedings in this particular duty.

During the year there were reported at the Custom House 42 deaths at sea, other than those resulting from shipwreck.

In conclusion, it now again becomes my privilege to express my gratitude for the confidence you continue to repose in me, and for the courteous attention you ever give to the representations I have the honor to make to you in furtherance of the better health of the people of this County Borough,

And am, Gentlemen,

Yours very obediently,

JOHN BATELY, M.D.,
M.O.H.

